

SPHERICAL COVERAGE DUAL MODE SENSOR FOR UAS SEPARATION ASSURANCE, Phase I

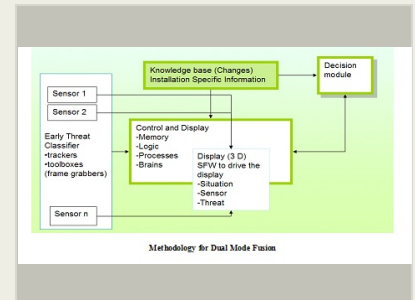
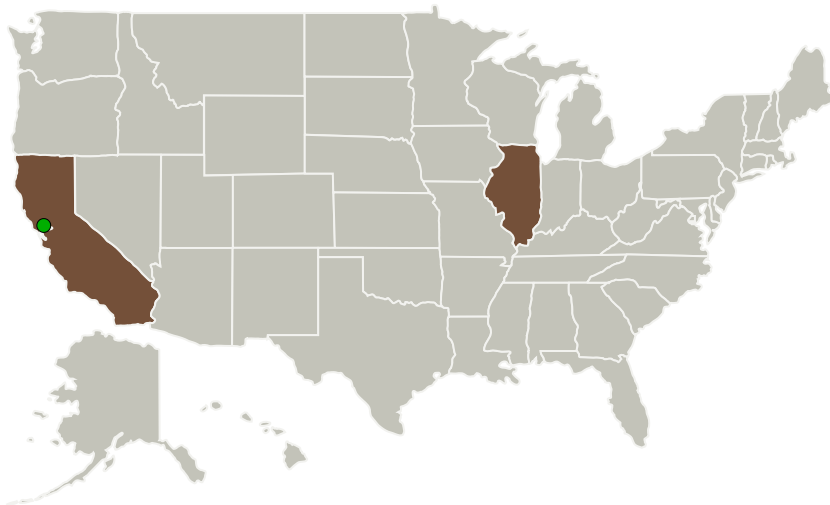
Completed Technology Project (2013 - 2013)



Project Introduction

Proposed is a dual-mode sensor for use aboard unmanned aircraft for safe operation in the NAS that: 1. Incorporates high resolution Millimeter Wave radar with high resolution Electro-Optical sensor. 2. Achieves complete real time, full time spherical coverage around the UAS platform by employing two hemispherical dual mode sensors, one directed forward and one directed to the rear.[which exceeds the detection range and field-of-regard (FOR) for all nearby air platforms in FAA Regulation 7610.4 and other requirements from DOD/FAA documents]. 3. Utilizes multiple coherent transceivers. 4. Meets SWaP and cost requirements for most UASs, including price (less than \$3000 in quantity), size (less than 1 cubic feet), weight (less than 2 lb) and power (less than 10W). 5. Leverages as needed the Automatic Dependent Surveillance Broadcast (ADS-B), which will be implemented by the FAA in the NAS. 6. Considers aircraft that operate without ADS-B. 7. Performs multiple functions; including autonomous detection, tracking, predicting of future track and specification of collision avoiding maneuvers. 8. Is self-contained, with sensor capability combined with on-board computing and flight control system, yet can be operated with sense and avoid interoperability.

Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
Epsilon Lambda Electronics Corporation	Lead Organization	Industry Small Disadvantaged Business (SDB), Veteran-Owned Small Business (VOSB)	West Chicago, Illinois
● Ames Research Center(ARC)	Supporting Organization	NASA Center	Moffett Field, California

Primary U.S. Work Locations

California	Illinois
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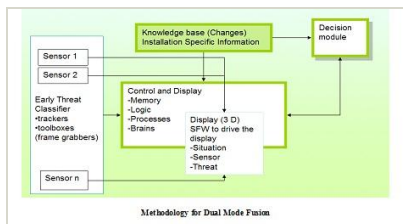
Project Transitions

**May 2013:** Project Start**November 2013:** Closed out

Closeout Documentation:

- Final Summary Chart(<https://techport.nasa.gov/file/138689>)

Images



Project Image

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(<https://techport.nasa.gov/image/130498>)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Epsilon Lambda Electronics Corporation

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

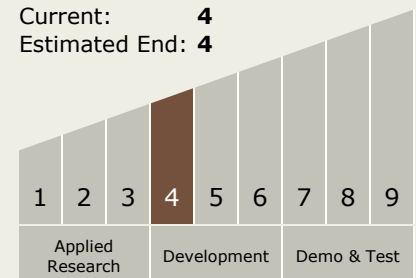
Robert Knox

Technology Maturity (TRL)

Start: 4

Current: 4

Estimated End: 4



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Technology Areas

Primary:

- TX16 Air Traffic Management and Range Tracking Systems
 - ↳ TX16.5 Range Tracking, Surveillance, and Flight Safety Technologies

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System